GUIDE FOR

FORMS MANAGEMENT

Approved For Release 2002/09/26 : CIA-RDP76-00883R000100090072-0

CHAPTER 1

THE ROLE OF FORMS ADMINISTRATION IN INFORMATION SYSTEMS ANALYSIS

1. Forms Administration Program of CIA

The Federal Records Act of 1950 provides the legal basis for our paperwork management program. The act requires the head of each Federal agency to establish a continuing program for the economical and efficient management of the records of his agency. The Forms Administration Program is an integral part of the creation phase of paperwork management.

a. To carry out this Program, the CIA Records Administration Officer must plan for and do those things necessary to make our paperwork effective with the least expenditure of money and manpower, yet generate the lowest possible volume of paperwork. To support this effort, the forms originator and forms analyst have a responsibility at the first point of creation; that is, to see that the form can be prepared and read easily, that it can be procured at a reasonable cost, and that it is necessary.

b. This Program has brought about a gradual change from the old "office of record" concept of managing paperwork. Under that concept, paper records were filed in small offices throughout an

organization, so that it was necessary only to design forms for storage and retrieval from a file drawer. Now, under the "central data bank" concept, the analyst must design forms that are compatible with a growing number of automated systems to arrange, store, and recall information. Often, the information must go from paper to tape, and then be recalled in a paper printout. Frequently, it must go from hard copy to microfilm, and then be restored to a document that is fully legible. Many forms must be designed to be read by an optical scanner. Consequently, the problem of compatibility has also forced the forms analyst to function as an important member of the paperwork management team.

c. An area of growing interest in the design of forms is the use of forms as source documents for data processing systems. Today, the majority of transactions within Government depend largely on forms as the principal media of data transmission (reports, surveys, etc.). There is little doubt that they will continue to perform this function, for despite the computer and its sophisticated software accessories, forms are still needed in many situations.

d. The avalanche of forms now found in computer records departments testifies to the fact that data processing has increased the use of paper forms. What

is of greatest interest to the manager is the change in types and uses of forms--as well as the new ways in which forms are used and the new things they can do.

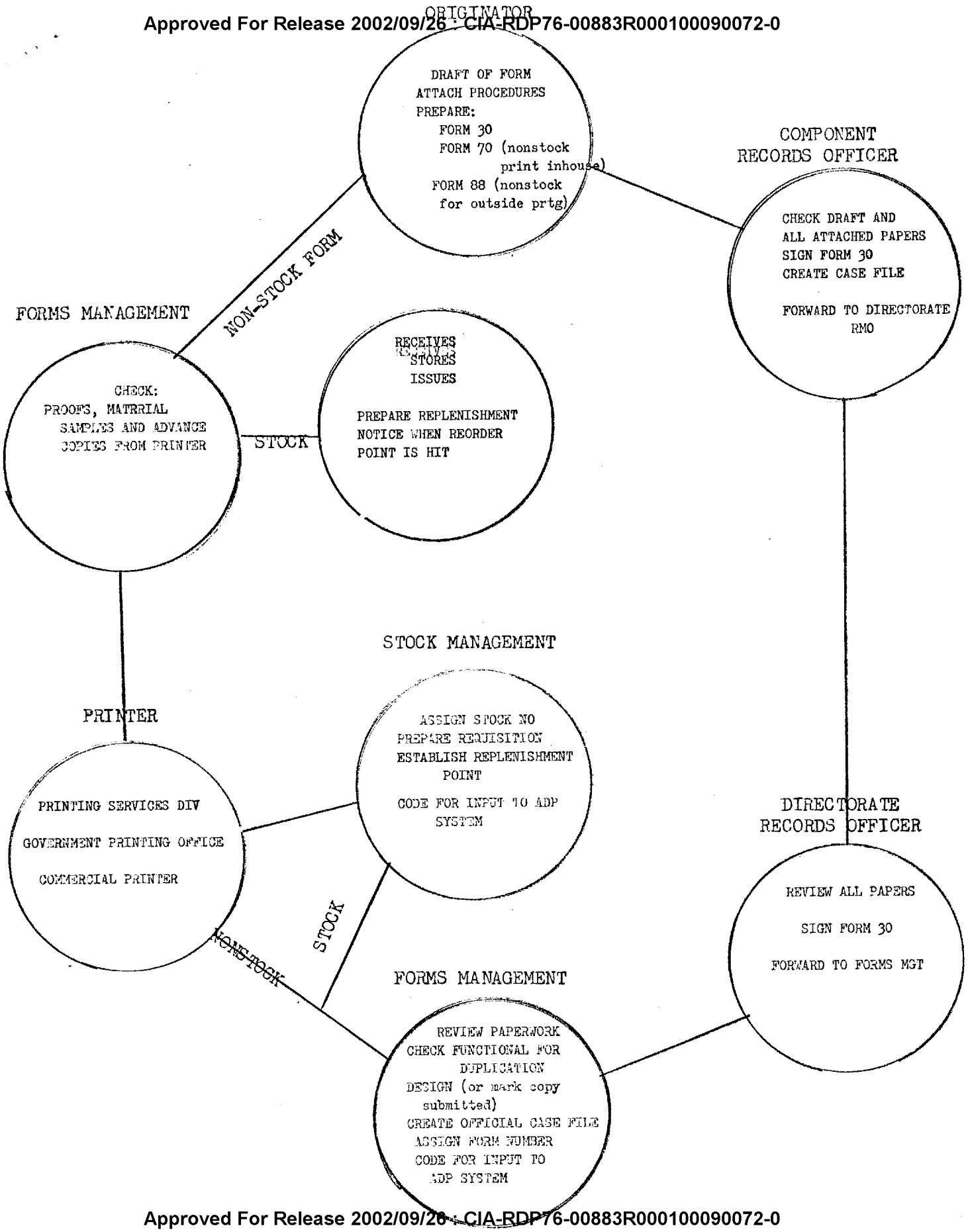
(1) There has been a transition from a passive sheet of paper, of little significance, to a thing of dimension with an active role in the information explosion. Forms now feed the machines which do the daily work of the Agency. These machines produce forms that control billing, production, and inventory processes, and capture from these processes the highly critical information used by managers in carrying on their programs.

(2) These machines now depend upon forms as the source of uniform input information in the preparation of output data. This is particularly true in the use of optical character recognition (OCR) techniques, for the advent of OCR and microfilming equipment is a major step toward the new use of forms as source documents and as direct input for data processing systems.

e. In the future, those involved in the design and control of forms will be required to obtain the skills necessary to design forms that are compatible with a wide

range of mechanized data processing systems. The technical characteristics of these machines (computer, tab equipment, etc.) will dictate many of the factors in designing forms that are compatible with them. If a machine is fed by a roller device, for example, the analyst does not need to specify marginal punching to assure correct registration of the form. But if the machine is fed by a sprocket type pinfeed device, the analyst must be able to specify the proper marginal punching horizontal and vertical spacing, and even the maximum length and width of the form. With either type of machine, however, he must specify the kind of carbons and papers that will make the form most compatible with the equipment.

f. According to industry and government statistics, it costs about $30 to use a form for every dollar spent to print it. The magnitude, therefore, of potential economics in manpower, supplies, safes, and space which can be realized through effective management of a forms program is significant.



CHAPTER 3

GLOSSARY OF TERMS FOR FORMS MANAGEMENT

FORM. A form is any document on which constant data is preprinted and blank spaces are provided for filling in variable information.

AGENCY FORM. A form developed in-house, standardized and approved for use by Agency components.

NON-AGENCY FORM. An approved form of other Government departments, agencies or establishments and are required by the Agency in performance of its activities. These include but are not limited to:

(1) Atomic Energy Forms (AEC)

(2) Civil Service Commission Forms (CSC)

(3) Compensation Act Forms (CA or BEC)

(4) Department of Defense Forms (DD, DA, AF, Navy)

(5) General Services Administration (GSA, OF, or SF) Forms

(6) Public Head Service (PHS)

(7) Department of State (DS, FS, JF)

(8) Treasury Department (TD, W-2, W-4, IRS)

(9) Miscellaneous - State Tax Forms, Insurance Hospitalization Forms, Credit Union Forms.

STOCK FORM. A stock form is one which is stored and issued by the Office of Logistics through the Building Supply Offices. It usually has wide Agency usage or it may be used by only one office but in such large quantities as to cause acute storage problems.

NON-STOCK FORM. A non-stock form is a form of primary interest to one office and is stored in that particular office. Occasionally another office may have a need for these non-stock items and will contact the Records Officer responsible for that office.

LEAD TIME. The time required from date of request until receipt of forms (includes processing in forms management and printing plants):

Printed in Agency - 20-40 days lead time

Printed at GPO or Commercial Printers - 120-180 days lead time

BINDING MARGIN. The blank or unused edge of a form provided to permit punching or fastening or both.

BLEEDING. Ink coverage up to and off the edge of a printed sheet. To accomplish this effect, the printer must run an oversize sheet through the press to accommodate the extra ink coverage, then trim to required size.

BLOCK-OUT. A method used to eliminate certain entries from one or more copies of a set of forms so as to obscure the carbon or ink image.

BOX DESIGN. A form style which encloses the caption and entry space for each item or question on the form in a retangular space. Captions are printed in small distinct type in the upper left corners of the space. This leaves the remainder of the space (box) for fill-in. ~~Same as ULC.~~

CARBON PAPER. Tissue to which has been applied a coating of carbon black in combination chiefly with acids, waxes, and oils to permit producing a copy.

CARD/LEDGER STOCK. A heavy paper (48 to 220 basis weight, government) that is used in visible files or for forms which receive much handling.

CONTINUOUS FORM - NOT MARGINALLY PUNCHED. One of a set of forms printed one after another on a continuous sheet to eliminate repeated insertions in writing machines. They may be in strip or fanfold construction and are perforated for easy detachment of individual sets.

CONTINUOUS-STRIP MARGINALLY-PUNCHED FORMS. Same as above only they are marginally punched for use over alining devices on machines such as a pinfeed typewriter, or high-speed printer. Usually supplied in roll form or accordion fold, perforated for easy separation.

DECOLLATOR. A machine which removes the sheets of carbon paper from continuous forms.

DIE CUT CARBON. Carbon paper in a multiple part form in which holes are die cut in the carbon paper to prevent reproducing carbon impressions from one copy to the other.

DINGBATS. Symbols, such as stars, arrows, circles, used to attract or stop the eye and call attention to particular items on a form.

ELITE TYPEWRITER TYPE. A size which produces 12 characters to an inch horizontally. (Selectric I)

FANFOLD FORM. Continuous forms or sets of forms printed across the width, alternately on the front and back, of a wide strip of paper. They are perforated vertically between the parts along the alternate or accordion folds of right and left edges and horizontally between the sets and folded fan-wise vertically so all printing is face up.

FORMS DESIGN. The technique of placing the various entries on a form to simplify fill in, processing, and filing -- usually in consonance with established forms design standards to hold down cost, make for correct construction, and fit into the controlling procedures. Design does not begin until an analysis is made to resolve WHAT goes on the form. Forms design continues the analysis until it resolves how to best arrange and present the information.

FORMS DESIGN GUIDE SHEET. A sheet that is preprinted (in non-photographic blue ink) with graduations on it to help calculate proper spacing to fit the writing method, both horizontally and vertically. (Form 2355).

FONT. A complete assortment of type (typewriter, varityper, printing press) of one style and size.

GRIPPER MARGIN. That part of a sheet of paper which is caught by the grippers on the impression cylinder of a press during the printing process. Usually widthwide on small presses; lengthwise on large presses.

LAYOUT. Fully designed form on a forms design guide sheet to guide the compositor in the selection of the kind and size of type and rule weights and the grouping of the printing master.

ONE TIME CARBON. Carbon paper designed for immediate disposal after extraction from interleaved set.

OVERPRINT. Adding new material onto an existing form or printed item by a second printing, including obliterating any material not wanted.

PERFORATION. A series of slits (lines) or pin holes pierced in paper to weaken it for easy separation.

PICA. (1) In typewriters a size of type producing 10 characters to an inch horizontally (Selectric II). (2) A printer's unit of vertical type measure, equal to 12 points, slightly less than 1/6 inch (6.04 picas/in.).

PINFEED. A device for feeding, alining, and registering marginally punched forms on business machines.

PITCH. The number of characters a machine will print per linear inch.

PRINTING REGISTRATION. (1) A precise adjustment or correspondence of lines and spaces so that fill-in blocks on two or more copies of a multipart form, to be filled in at one writing through use of carbon, will be in perfect alinement. (2) In color printing the exact superimposition of the edges of the colors to prevent blurring.

RULE WEIGHTS. Rules or lines on a form used primarily to guide, attract, or stop the eye. They can be light, medium, heavy, double parallel, and dash or dotted lines, depending on their use.

SCORING. The weakening of the fibers of sheets of paper by pressure rather than by cutting so that the sheet can be folded on a straight line at a given point.

SCREENING. The process for reducing ink density on a form by breaking up the image into a series of tiny dots. The density is determined by the number of lines or dots of ink per square inch.

SPECIALTY FORMS. Multiple copy forms, such as unit sets, continuous sets, die-impressed and form-topped stencils, hectograph and offset masters; any special die cut, carbon-interleaved or perforated forms; and any type of form which requires such special equipment for its manufacture that the source of supply shall be through the Government Printing Office.

SPECIFICATIONS. A statement of requirements to which the construction of a form must conform. Requirements include such items as paper, carbon, ink, number of copies, size, perforations, punching, etc.

SPOT CARBON. Carbonized tissue which has been coated with ink only in predetermined areas or zones at regular intervals along the width and/or length of the sheet or roll. When interleaved into a form, certain information may thus be placed on some copies and not on others at the time of execution.

STRIP CARBON. Tissue sheets carbonized in strips so that only the data entered at the carbonized location are reproduced on the following copies.

UNIT SET. A multiple set of forms held together by a pasted stub ready for fill-in. Sets can be carbon interleaved, made of carbonless paper, or backs of forms can be carbonized. The pasted stub is perforated which permits easy extraction of carbon paper.

CHAPTER 4

FORMS SIZES, PAPER GRADES, WEIGHTS AND COLORS

A. FORM SIZES

OBJECTIVES

In determining the proper size for a form the objectives to be achieved are:

a. The smallest size that is practicable for the specific purpose.

b. A size that will cut without waste from a standard sheet size.

c. The minimum number of sizes for all of the forms used.

d. Economies in costs of paper, press work, binding, filing equipment, etc.

FACTORS TO BE CONSIDERED

The basic factors to be considered in selecting a standard size for a form are:

a. Quantity and arrangement of data to be entered on the form.

b. Sizes of other related forms or forms used in the same procedure.

c. Binding and filing requirements.

d. Carriage widths and margin requirements of typewriters or other machines on which the form may be used.

e. Standard sizes of envelopes in which the form may be enclosed.

The size of the form should provide sufficient space for normal or average quantities of data to be entered thereon. It should not be predicated on infrequent needs for recording unusually large amounts

of information. In those cases in which additional space is sometimes required, it is generally more economical to use additional sets of a form than to adopt a size large enough for maximum possible requirements.

STANDARD FORM SIZES

The standard form sizes which are included in the printing requirement contract are listed on the following page. Standard sizes of "specialty" forms, such as snapout, continuous, etc., are shown at the end of this chapter. (see figure 2)

HOW TO SPECIFY FORM DIMENSIONS

In specifying the sizes of forms, the first dimension shown indicates the position or "direction" of the printing. For example, on an 8" x 10 1/2" form the 8" dimension is considered as the top of the form, and where the size is given as 10 1/2" x 8", the 10 1/2" dimension is considered as the top.

B. PAPER GRADES

OBJECTIVES

In determining the proper grade of paper to be used for a form the objectives to be achieved are:

a. The most economical grade that is practicable for the specific purpose.

b. The minimum number of standard paper grades in the various kinds of paper stock.

FACTORS TO BE CONSIDERED

The basic factors to be considered in selecting the proper grade of paper for a form are:

a. The amount of handling and reference involved in the use of the form.

b. The period of retention of the record for which the form is used.

KINDS OF PAPER

While there are many different kinds of paper, ranging from newsprint to very fine printing paper, the kinds most generally used for forms are: bond, index, ledger, manifold, and carbonless.

A bond paper ranges from 100% rag content down to Chemical Wood sulphite. With weights from 24# to 40#.

Ledger paper is somewhat the same as bond, except that it is heavier and therefore more expensive. It has superior erasing qualities, and is generally used for forms subject to much handling and erasing. Weights for ledger paper are 48#, 64# and 88#.

Index paper is perhaps better known as card stock. It has a rigid body and good writing and erasing qualities, and it stands up stiffly in a file drawer. Weights for index paper are 220#, 280# and 340#.

Manifold is a light paper sometimes called onion skin or tissue. Because of its thinness, it enables the user to obtain a substantial number of carbon copies. It has relatively little strength, but this does not effect its use as a second or succeeding sheets, although it prevents its being used as the top sheet in a multi-part set or alone.

Carbonless papers are becoming increasingly important in the forms world. There are a number of variations of this and each has its special purpose and applications. Here are two basic categories of carbonless papers:

(1) Mechanical. This type involves a transfer of image, or appearance of an image, through pressure or impact, either by hand or mechanical means. The base sheets have a coating which either (a) interacts with the coated back or front of another sheet or (b) has a protective (blush) coating over a carbon-derivative base coating. Under pressure, this top coating is removed, exposing the dark coating underneath. This type requires no special top or bottom paper--it is "self-contained."

(2) Chemical. Here, the image appears when pressure is brought to bear on the paper because of the interaction of two chemicals. The first successful carbonless paper, NCR, utilized this principle. It requires separate sheets of chemically coated base stock, with the chemicals on the face of one sheet and the back of another. The chemicals were encapsulated, and when the sheets were written upon, these capsules ruptured and caused the chemicals to mix. A dark blue color ensured (the original NCR copy). A variation of this is the single-paper version, wherein both chemicals, separately encapsulated, are put into the paper during the papermaking process. Thus, no coating is needed, and the single sheet contains all the elements needed for the appearance of an image under pressure or impact. Today there are over 20 different brands of carbonless paper on the market.

STANDARD PAPER GRADES

The standard grades of paper used for forms by the Agency are shown at the end of this chapter. See Figure 1

C. PAPER WEIGHTS

OBJECTIVES

In determining the proper weight of paper to be used for a form the objectives to be achieved are:

a. The lightest and most economical weight that is practicable for the specific purpose, depending on the kind of paper used.

b. The minimum number of standard weights in the various kinds of paper stock.

FACTORS TO BE CONSIDERED

The prime factors to be considered in selecting the proper weight of paper for a form are:

a. Size of the form.

b. Number of copies to be made at one writing.

c. Writing method.

d. Filing requirements.

e. Need for opacity.

f. Severity of handling.

g. Mailing requirements.

STANDARD PAPER WEIGHTS

Each kind of paper is available in one or more basic weights, which are generally specified by "substance numbers." Substance numbers indicate the weight, in pounds, of one ream (500 sheets) of the basic sheet size of the particular kind of paper.

The standard weights of papers used for the Agency's forms are shown in the table at the end of this chapter.

For most printed forms 32# bond chemical wood paper should suffice. In general, there is little to be gained by using a lighter weight of bond paper than 32#.

Forty pound bond chemical wood paper is usually preferable for forms printed on both sides to avoid the "show through" which affects the legibility and appearance of the form when a lighter weight is used. However, 32# in a colored paper (such as buff) may serve the purpose in view of the greater opacity afforded by colors other than white.

PAPER THICKNESS

Of the various types of forms used by the Agency, only one--Tags-- is specified by thickness of stock, rather than by weight. Thickness of stock is specified in terms of number of points, 1,000 points equaling one inch.

D. PAPER COLORS

OBJECTIVES

In determining whether colored papers should be used for a form the objectives to be achieved are:

a. Maximum functional efficiency at minimum paper costs.

b. The smallest number of standard colors.

FACTORS TO BE CONSIDERED

The basic factors to be considered in determining whether colored papers should be used for a form are:

a. The specific purposes to be accomplished, such as distinguishing particular functions or organizational units; facilitating processing, distribution and filing, etc.; where other means of

identification (use of numbers, symbols or different colored inks) are not adequate.

b. The need for opacity, particularly where the form is to be printed on both sides.

c. The relative cost of colored papers as compared with white.

STANDARD PAPER COLORS

The standard colors of papers used for the Agency's forms are shown in the table at the end of this chapter.

KIND OF PAPER	GRADE OF PAPER	SUBSTANCE WEIGHT * 1,000 sheet GOVERNMENT WEIGHT	SUBSTANCE WEIGHT * 500 sheets COMMERCIAL WEIGHT	COLORS (White, blue, buff, green pink, salmon, canary, and goldenrod)	OPACITY	APPROX. NO. OF SHEETS PER FILE INCH	U S E
WRITING	CHEMICAL WOOD UNWATERMARKED	24	12	White and colors	Print one side only	400	Used for the majority of the forms
		32	16		Preferably one side	300	Will withstand average handling
		40	20		Print one or two sides	250	Can be retained from 10-15 years
BOND	25% RAG UNWATERMARKED	32	16	White and colors	Preferably one side	300	Used for record forms that will be retained permanently
		40	20	White Only	Print one or two sides	250	Has greater durability than chemical wood paper
MANIFOLD	CHEMICAL WOOD (unwatermarked)	18	9	White and colors	Print one side only	550	Used for multiple copy forms for high speed printers
LEDGER (Inc. TAB CARDS)	CHEMICAL WOOD	48	24	White Only	Print one or two sides	225	USED FOR POSTING RECORDS SUCH AS VISIBLE AND VERTICAL RECORDS. USED FOR MACHINE PROCESS CARDS CAN WITHSTAND FREQUENT HANDLING CAN BE RETAINED UP TO [illegible] years
		64	32	White and colors		175	
		88	44			125	
INDEX	CHEMICAL WOOD	220	110	White and Buff	Print one or two sides	125	Cards filed vertically in tray, cabinet, box or drawer. Withstands excessive handling Can be retained up to 30 years
		280	140	White and colors		120	
CARBONLESS	NO CARBON REQUIRED BOND (cf- coated front	14.3, 15, 20, 26, 30		White and colors	All Carbonless will be printed one side only		Offers greater ease of handling, cleanliness, and speed. Eliminates extracting and disposing carbons. Cannot be erased Life span of copies not yet determined
	BOND (CFB - coated front and back)	12.5, 17, 28					
	BOND (CF) - coated front only)	15, 20, 27, 35					

FIGURE 1. Kind, Grade, Weight and Color of paper used on forms

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PAPER SIZE	SIZE AND APPLICATION
4x5¼	Standard form size (one quarter of letter-size sheet).
4x10½	Standard form size (one-half of letter-size sheet).
5x3	Standard 5"x3" vertical filing card and small form size. Also standard post-card size when card is filed vertically after completion.
5½x3¼	Standard post-card size when filing is not required.
6x4	Standard 6"x4" vertical filing card and small form size.
7 3/8 x 3¼	Standard Tab Card
8x3½	Standard small check-size form. Fits GPO envelope, size 8⅝"x3⅝", without folding (one-third of letter-size sheet).
8x5	Standard 8"x5" vertical filing-card size.
8x5¼	Standard form size (one-half of letter-size sheet).
8x5¾	Standard 8"x5" visible filing-card size with ¾" perforated strip on bottom to allow for typing index information. Stub then may be folded under or torn off.
8x7	Standard form size to fit 8⅝"x3⅝" window envelope with one fold (two-thirds of letter-size sheet).
8x10½	Standard form size (letter-size). Fits 8⅝"x3⅝" window envelope with two folds. *Most forms will be this size.*
8½ x 11	Standard form for the Automated Cable System
8x12½	Standard "legal" form size.
8x21	Standard form size (extended information). Folds to 8"x10½".
9x12	Standard "legal" form size.
11x11'	Standard size for ledger books.
11x14'	Standard size for ledger books.
10½x16	Standard form size (extended information). Folds to 10½"x8".
11x17	Standard for special ledgers and records.
14x17	Folds to 8½"x14" (extra legal).
16x21	Standard form size (extended information). Folds twice to 8"x10½".

FIGURE 2. FORM SIZES AND APPLICATION

CHAPTER 5

REPRODUCTION PROCESSES

OBJECTIVES

In determining the reproduction process to be used in producing a form the objectives to be achieved are:

a. Maximum efficiency and economy consistent with the purposes and use of the form.

b. Best service, where delivery time is an essential factor.

FACTORS TO BE CONSIDERED

The following factors should be considered in selecting the reproduction process to be used in producing a form:

a. Purpose of the form.

b. Quantity required.

c. Intricacy of the form.

d. Paper to be used.

e. Delivery requirements.

f. Type of form (if the form is to be "press" perforated, or numbered, this operation could be performed while printing by the letterpress method).

g. Relative cost.

COST FACTORS

Reproduction costs generally include:

a. Composition (including preparation of the original, in the case of offset lithography).

b. Negatives and plates.

c. Presswork.

d. Bindery operations (including punching, perforating, numbering, folding, padding, etc.).

DESCRIPTION AND FIELDS OF USE

In general, the reproduction processes which may be used for producing forms include letterpress, offset lithography; these are the principal processes used in the production of forms which are procured from commercial sources, GPO or in-house. The following sections present a description of these processes and suggestions as to the fields in which each may be used to the best advantage.

A. LETTERPRESS

(Other items for this process are--relief printing, typographic printing.)

DESCRIPTION OF THE PROCESS

In this process reproduction is accomplished by the transfer of ink from a raised image to the paper on which the copy is desired. The image is raised, in relief, above the blank areas; only the parts that print touch the ink rollers and the paper. The raised image is ordinarily made up of (1) metal type characters locked in a frame (or chase), (2) a zinc or copper photoengraving (cut), (3) a solid type-metal plate (stereotype) which has been cast from a papier mache matrix (mat) made from an original type-set or photo-engraved form, or (4) a hard surfaced casting (electro-type) similar to a stereotype except that it is of harder metal and is electroplated for long wear.

The letterpress "form" is generally composed of one or more of the following: type, cuts, rules, borders, ornaments, etc. These materials

are arranged into units. One or more units can be arranged in a chase and the prints made direct from such a "form", or the units may be electrotyped, or stereotyped or duplicated in a rubber or plastic plate. Because the lead alloy from which the type is made and the zinc or copper from which line cuts or half-tones are made will wear out on excessively long runs, the paged material is frequently electrotyped or stereotyped, and the resulting plates are used as workers, saving the original material from wear. By the electrotype or stereotype process several workers of the same master can be prepared to make multiple runs when very large quantities are ordered.

COMPOSITION

"Composition" is the process of arranging the lines of type, rulings, etc., of a single page in a "form" which will eventually be locked up in a press to print the copy. While printing from type and original cuts is employed for a large percentage of forms work on letterpress presses, the composition may be used to make a pattern plate when the originals must be preserved, or when there is danger of wear, or when one unit must be run two or more up.

The three class of type generally used in letterpress printing of forms are:

a. Linotype - The types are cast as a solid line of type on a Linotype machine and set as solid lead slugs.

b. Monotype - In this process a keyboard machine is used to produce a perforated tape; this tape in turn is used to control a casting machine so that it will cast individual types in a justified line of the desired width.

c. Foundry - The types are cast as single letters on individual bodies from hard metal. These types are set by hand.

PROOF OF COPY

It is generally advisable to have the printer furnish a proof sheet so that it may be checked for accuracy.

Author's alterations should be indicated in a different colored pencil or ink to distinguish them from corrections or errors made by the printer. Such alterations should be kept to a minimum, since they entail additional expense. The printing contract provides for a special charge for author's alterations, and requires that the printer submit, with invoices involving author's alterations, copies of all subsequent proofs, copy of the final proof and finished approved copy of the job. The final proof must be signed and dated by the person approving it on behalf of the using agency.

STYLES OF COMPOSITION

Definitions of each of the three styles of composition are given in the following table:

COMPOSITION STYLE	DEFINITION
A. Plain Matter	Any composition which may or may not cover an entire page, and may be set in one or more sizes and styles of type. On machine (pen) ruled forms, whether or not box headings are a part of the form all composition will be considered Plain Matter wherever Plain Matter and/or white space controls the area.
B. Tabular Matter	Any composition consisting of three or more columns with separate justification and with or without down type rules. On machine (pen) ruled forms consisting of box headings only, composition will be classed as Tabular Matter.

C. Intricate Tabular Matter	Any composition consisting of three or more columns, set with down and cross type rules.

FIELDS OF USE

The letterpress process is generally to be preferred where any of the following requirements are involved in the production of a form:

a. Composition in printer's type.

b. Printing and pen ruling.

c. Perforation on the printing press.

d. Serial numbering.

e. Printing on Onion Skin.

f. Quantity sufficiently large to justify the cost of letterpress printing.

B. OFFSET LITHOGRAPHY

(Other terms for this process are -- offset printing, photo-offset, photo-lithography, planography.)

DESCRIPTION OF THE PROCESS

In this process the ink is transferred from an image that is neither raised nor recessed, but is part of an almost plane surface. The basic principle of the process is that grease and water do not mix, but are mutually repellent. The non-printing surface of the plate is coated with a substance that has an affinity for water. The image or printing surface is coated with a substance that repels water but has an affinity for grease.

The offset lithograph press employs three cylinders--a plate cylinder, a rubber-blanket or offset cylinder, and an impression

cylinder. The offset plate is clamped to the plate cylinder. This cylinder, as it revolves, rolls under a set of water and ink rollers. The image on the plate, which repels the water and accepts the grease-base ink, is transferred to the rubber-blanket cylinder (offset from plate to blanket). The blanket cylinder, in turn, impresses the image upon the sheets of paper as they pass between the impression cylinder and the blanket cylinder. The plate image is positive, the blanket image is negative, and the final image on the paper again positive.

Two main tapes of plates (or masters) are available for offset lithograph reproduction: (1) the photographic-image plate (metal, plastic, or paper); and (2) the direct-image plate (usually paper or plastic). While the process of reproduction is identical for both photographic-image and direct-image plates after the plates have been made, the techniques for preparing the originals for each of these types of plates differ in several respects. These techniques are described in the following sections.

PREPARATION OF ORIGINAL - PHOTOGRAPHIC-IMAGE PLATE

Any copy which can be photographed may be reproduced by this method. The means for preapring the original are unlimited. An existing copy may be used or a new layout may be prepared. Copies may be made the same size as the original, or reduced or enlarged in the same proportion as the original.

In preparing the original, a light blue pencil may be used for drawing guide lines (light blue will not reproduce) and for general layout of "copy." Instructions to the printer should be placed off the body of the original, since the reproduction will be exactly the same as the original.

Typing should be done evenly on a machine having a soft or medium platen and preferably using a carbon paper ribbon. If a machine equipped with carbon paper ribbon is not available, a lightly inked black fabric ribbon will give fairly good results. India ink should be used for all line work or sketches, since other inks require special photographic treatment. All parts should be of the same density. When an area of any size requires a solid block of ink, it is generally best to paste a piece of black masking paper on the original rather than to fill in with brush and ink.

On originals having hand-lettering, designs, or drawings, the quality of reproduction will be improved if the original is prepared in a conveniently large working size; reproducing the copies in a smaller size will minimize imperfections. Similarly, forms requiring close work or paste-up of small-size copy can be laid out in a large size and then reduced to desired size.

The original can easily be corrected or revised for reprints by pasting over the necessary changes, but it must be clean and free of excess rubber cement or glue. Chinese White paint may be used around the edges of the past-over to obliterate dirt and shadows. An eraser or razor blade can be used in eradicating small errors on the original drawn with india ink; however, if other data are to be substituted, care must be taken not to damage the writing surface of the paper. The original should never be folded, but either rolled or wrapped flat. Neatness is essential. Although the reproduction cannot be better than the original, most imperfections in the original can be eliminated by the lithographer from the photographic negative by retouching and

opaquing. Care in preparation of the original will obviate the time, effort and expense involved in subsequent retouching.

DIRECT-IMAGE PLATE (OFFSET MASTERS)

In direct-image offset work the original to be reproduced may be drawn, written, ruled, lettered, painted, typed or traced on the plate, using either pencil, crayon, ink, carbon paper, fabric or carbon paper ribbon, rubber stamp, numbering machine, brush or air brush. Only materials having an oil base and especially designed for applying images direct to the plate will reproduce. The image may also be a mechanical transfer from printing type, electrotype or from another offset plate. The direct image plates are printed the same as plain paper, but the ink is an oil base black reproducible ink.

Direct-image plates are available from several manufacturers in single cut sheets of several standard sizes, and in continuous fanfold style or continuous roll style, which can be separated at the perforations. Letterheads, bulletinheads and other fixed information can be preprinted on these plates.

COMPOSITION

Because of high composition costs, an increasing amount of printing by the offset lithography process--such as forms, reports instruction manuals, rabular work, parts books, etc.--is done by using electric typewriters (Vari-type) for the composition. Using typists, this form of composition offers economy and speed, and can, of course, be combined with drawings, rules or illustrations. The Vari-typer is finding increased use in the typing of originals for forms because it provides the variety of type sizes and faces necessary for forms. The savings in

cost are apt to be greatest on the basis of made-up page, particularly for statistical or columnar work. Headings and other large-size composition are handled either by special paper letters or type repros positioned on the paste-up with the typewritten text and line work.

Printer's type may be used without press equipment to letter an over-size original. In this method, which is known as "type-stamping," a line of type is set and held in a special hand stamp, separately inked for each impression. This method may be used in the preparation of the originals of various types of charts.

Much attention has been focused during the past few years on so-called substitute or new methods of type composition which will probably reduce the cost of composition for offset lithography. They are called "substitute" because they employ some means other than conventional metal type-setting to prepare reading matter for printing. These new methods of type composition, whether by typewriter or photo-typesetting machine, generally apply only to printing processes which are entirely photographic, such as offset lithography (and gravure). Photo-typesetting has one thing in common with typewriter methods of composition--it produces lines or galleys of text matter without the use of metal type.

Offset lithography also affords the advantage of savings in composition costs on reprints, since the lithographer usually retains the negative used in making the offset plate and charges only for changes which may be required on a reprint. In letterpress printing, however, the printer generally charges for composition not only on the initial run but on reprints as well.

FIELDS OF USE

The offset reproduction process should in general, be used where the considerations justifying the use of the letterpress process do not apply.

The photographic-image method of offset reproduction should be used for:

a. Reprints of a form which has already been printed, but for which plates or type are not available.

b. Forms for which the quality and quantity requirements preclude the use of the direct-image method.

The direct-image method may be used where a department maintains its own offset facilities and where this method is adequate to meet the quality and quantity requirements.

CHAPTER 6

APPLYING STANDARDS AND TECHNIQUES IN DEVELOPING FORMS

Designing an Efficient Form.

Perhaps the ultimate goal in forms design is efficiency. If a form is efficiently designed, it is easy to complete and to use. And because it is easier to use, there is less error, delay, and noncompliance in carrying out the procedure it is designed to support. Just as there is much emphasis in the computer industry on the design of "user-oriented" hardware and software as a test of effieincy, so it is important to design forms that are "user-oriented." For example, if the form is so confusing and troublesome that the responder will delay in submitting it (or fail to submit it), or if he submits information that is not accurate, the form is not efficiently designed--even though it may have been printed at an economical costs.

a. There are many examples of forms that defeat their purpose through poor design. For example, it is not unusual to see poor design in an application form. The result is that, even though it may have been distributed by an agency that is actively recruiting for new employees, a poorly designed application form may actually discourage applicants.

b. Accordingly, to make a form more efficient, by reducing clerical errors, it should do these things:

(1) It must allow enough writing space to enter all of the data.

(2) It must have proper spacing to permit either hand or machine entries.

(3) It should have the correct sequence of data, and an arrangement that is compatible with the operation of the machine it will be used on.

(4) It must have the instructions correctly placed for filling out the form. (For example, do not place the instructions at the bottom of the page, where the typist cannot see them until she has completed all of the entries on that page.)

(5) It must end up with legible reproduction; that is, the type size and the type font must be selected to be read comfortably.

Analyzing a New or Revised Form. (see figure 3)

The analyst should always analyze the procedures involved in the use of a form before he starts to design it. A form cannot be evaluated separately from its implementing prodedures. When the prescribing directive outlines a procedure it also attempts to standardize that procedure. If the directive prescribes a form, the form must be designed to ensure that the prescribed procedure (such as reporting procedure) is observed. That is, the form should not only actually control the operation, but should serve as an accurate and detailed record of the operation (or transaction).

Design Criteria.

After the analyst has obtained the answers to the questions and has determined that the form is really necessary (or whether it duplicates an existing form, etc.), he should review the rough draft (or the revised draft) once more, to see that it meets the criteria of an efficient design; these criteria are:

	PROCEDURE ANALYSIS	FORMS ANALYSIS
WHAT	What is its purpose and why? Is it necessary? Have the purpose and use been clearly stated? Is it worth the cost?	What data are required to accomplish the purpose? Are all of the data necessary? Are any additional data necessary? Does the data duplicate that on another form or document? Can the form be combined with other forms serving a similar purpose?
WHO	Who performs each step and why? Organizationally and occupationally, are these the appropriate persons? Does each step serve a recognized purpose and produce a desired result? Have the procedural steps to be performed and the reasons for them been clearly stated?	Who requires the data? Are the data needed by the using office? Is it within the scope of the functions of the office? Who enters the data on the form? Are the items located and grouped in the sequence of their procedural use? Is sufficient space allowed in each item for the data required?
WHERE	Where is each step performed and why there? Can it be combined with similar work performed in another office?	Where are the data obtained from? Are data transcribed from or to another document? Are items arranged to facilitate transcription? Could the form serve as a final record to eliminate transcription? Are any of the data constant so that they can be preprinted on the form? Where are the data routed to? Can "from" and "to" items be provided on the form to eliminate transmittal letters? Can the form be designed for mailing in a window envelope to eliminate addressing envelopes?
WHEN	When is each step performed and why then? Why are the steps in that particular order? Can peak loads be levelled off by better scheduling or staffing?	When is the form filled in, interpreted, and filed? Can the number of times the data are prepared and used during a given period be reduced?
HOW	How is the work done and why that way? Can the method be improved? Is the most efficient office equipment being used for the job?	How are the data entered? Is spacing properly proportioned for hand, typewriter, or other machine fill-in? Are the data arranged so that the flow of writing is continuous from left to right and from top to bottom? How is the form filed? Are reference items placed where they can be referred to best in files or binders? Is size of the form most appropriate for handling and filing?

ELIMINATE ● COMBINE ● CHANGE SEQUENCE ● SIMPLIFY ● IMPROVE

FIGURE 3. BASIC PROCEDURE AND FORM ANALYSIS

a. Eliminate everything not essential, whether it be an entire form and procedure, or a portion of them, to prevent any duplication or overlap.

b. Combine similar functions (if elimination is not feasible), to avoid duplication.

c. Change the sequence of an operation, to obtain the most equitable workload.

d. Simplify all necessary details, to obtain the most efficient and effective performance.

e. Improve to achieve maximum results with a minimum investment of manpower, materials, and machines.

Developing a Form.

A standardized form is one that has been designed and designated in accordance with prescribed standards. These standards, (see figure 4), are established for the arrangement of items, including the margins, titles, spacing, and wording; for designating and numbering the forms; for the size of forms; and for the design layout, including the size and style of the type.

a. To develop a standardized form, it is necessary to study the functional groups of forms, and to consolidate those that contain similar data.

b. The design and construction of a form has a significant effect on the related procedure or system and how efficiently it operates. To anticipate the operating problems, the analyst should review the questions in the checklist given here before completing the final design. Although not every item on this list will apply to any single form, when the answer is negative, further analysis is needed.

FIGURE 4

CHECKLIST OF FORMS DESIGN STANDARDS

1. Does horizontal and vertical spacing conform to required writing method--typewritten, handwritten, or machine?

2. Is form standard size?

3. Is box design used?

4. Were margins considered according to method of preparing and filing form?

5. If form is to be filed in a binder or fastened to a file folder, was prepunching considered?

6. Is the title descriptive?

7. If form is to be filed in a vertical or visible file, is title placed where it can readily be seen but will not interfere with filing or other data?

8. Are brief instructions for preparing form placed at top where they are readily seen, or close to the section or item to which they apply?

9. Are several paragraphs of instructions arranged in two columns?

10. Are "TO" and "FROM" boxes used to make form self-routing?

11. Are items on form arranged in sequence with those on other forms which data will be taken from or transcribed to?

12. Are items grouped to facilitate processing action?

13. Is item wording brief, clear, and simple?

14. Are section, column, and box headings identified by letters or numbers?

15. Are entry spaces which are not to be used shaded out?

FIGURE 4 (continued)

16. Have different ways of placing check boxes been considered for best arrangement?

17. Is sufficient space allowed for signatures and titles?

18. Is supersession notice clear and informative?

19. Are required security markings and notations shown on form?

20. Do selected type faces ensure legibility?

21. Have the weight, grade, and color of paper been chosen to efficiently and economically perform the particular job?

22. Have the use of form and the method of filing or binding been considered in determining whether a two-sided form is to be printed head to head, head to foot, or head to side?

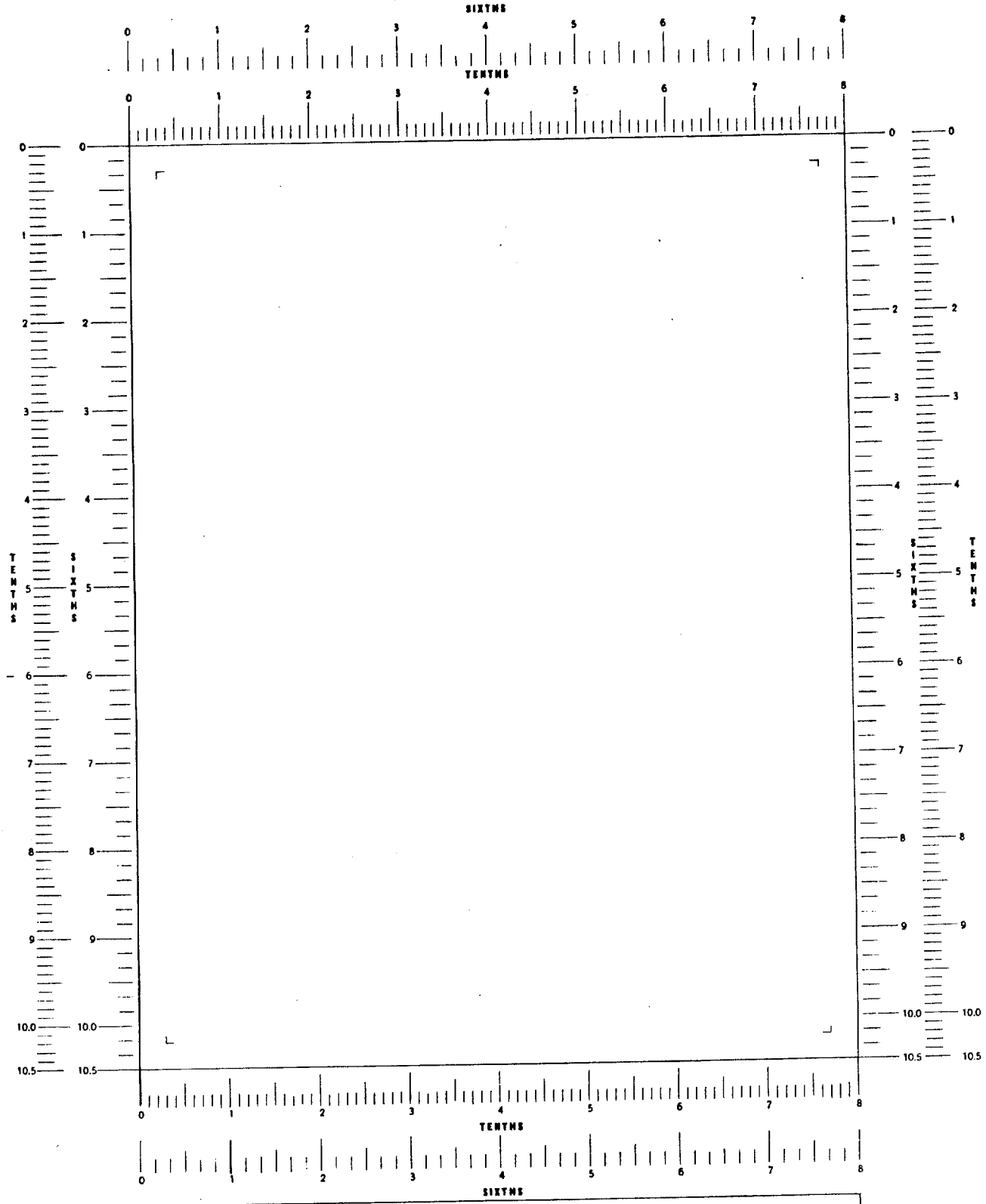
23. Has consideration been given to folding a large form to standard size to fit into standard equipment, binders, or folders?

24. If form is to be used on OCR equipment, was it designed to satisfy the critical requirements of this type form?

Using the Form Design Guide Sheet

To simplify the layout and promote accuracy in the final copy, the analyst should use the proper guide sheet designed for use in developing typewritten and handwritten forms. There are four sizes of these guide sheets. They are calibrated in nonreproducible ink, with standard guide marking of 1/6 and 1/10 to an inch. They come in the following sizes:

a. Up to 8 x 10 1/2 inches, use Agency Form 2355 (stock item) to draft forms in standard sizes up to, and including this size, both vertical and horizontal; see figure 5.



This guide sheet may be used tn draft forms in the standard sizes 3"x 5", 4"x 5¼", 4"x 6", 5¼"x 8", 3½"x 8", and 8"x 10½", both vertical and horizontal. Guide markings provide vertical spacing of six lines to the inch standard typewriter line spacing. Horizontal spacing is provided in 10ths (10 spaces to the inch) to accommodate both pica and elite typewriter spacing. Copy on forms sizes 5¼"x 8" and 8"x 10½" should be confined tn the area indicated by the corner markings.

FORM 12-64 2355 FORMS DESIGN GUIDE SHEET

b. Up to 10 1/2 x 16 inches, use DD Form 87, "Form Design Guide Sheet," to draft forms in standard sizes up to, and including, this size.

Designing the Spacing on a Form.

All typewriters, computers, and scanners will produce or read 6 lines to each vertical inch. If the type is elite, there are 12 spaces in each horizontal inch; if it is pica, 10 spaces to the horizontal inch.

a. Typewritten Forms. If the form is to be completed by typewriter, the analyst should compute the vertical spacing in units of six to the inch, and horizontal spacing in units of ten to the inch, to allow the typist room to complete the line, regardless of the type of typewriter used. With this vertical spacing, the typist would need to make no further adjustments after aligning the first line.

b. Handwritten Forms. If the form is to be completed by hand, the analyst should allow at least two vertical units (2/6-inch) for each line of the form, and 2 horizontal units (2/10-inch) for each character or figure to be entered.

c. Machine-Completed Forms. If the form is to be used on a high speed printer or tabulating machine, or on special office equipment, it must be designed with the greatest precision. Even the most infinitesimal error in the width of a column, or in placing a die cut, for example, may make the form completely unusable. This is especially true with OCR forms.

Selecting the Size.

It is important to use a standard size of paper, one that will permit economies in reproducing and microfilming, and one that will fit standard typewriters and filing equipment. If a nonstandard size form appears to be justified, the originator must discuss this with the forms management office and obtain the concurrence of that office before starting to develop such a form. In selecting the size it is necessary to keep in mind:

a. How much space is needed on the form, to enter the amount of information without crowding.

b. What method of filing will be used for the completed form.

c. What type of business machine or systems equipment (for example, optical scanners) will be used in preparing or processing the form.

d. Whether the form will be microfilmed for permanent storage.

e. Whether the form conforms to standard paper cuts.

Specifying the Paper Size.

In specifying the size of the form, state the flat size of the sheet. (For example, if the form is to be printed on a sheet that is 8 x 21 inches and folded to 8 x 10 1/2, it is specified as 8 x 21 inches.) In stating the flat size, always give the reading width first, and then the length. That is, if the flat size of a form is 8 x 10 1/2 inches, but the form is to be turned sideways, the size should be specified as 10 1/2 x 8 inches (see figure 6).

Standard Paper Size.

The standard basic paper size used for printing a form is 32 x 42 inches. (see figure 7).

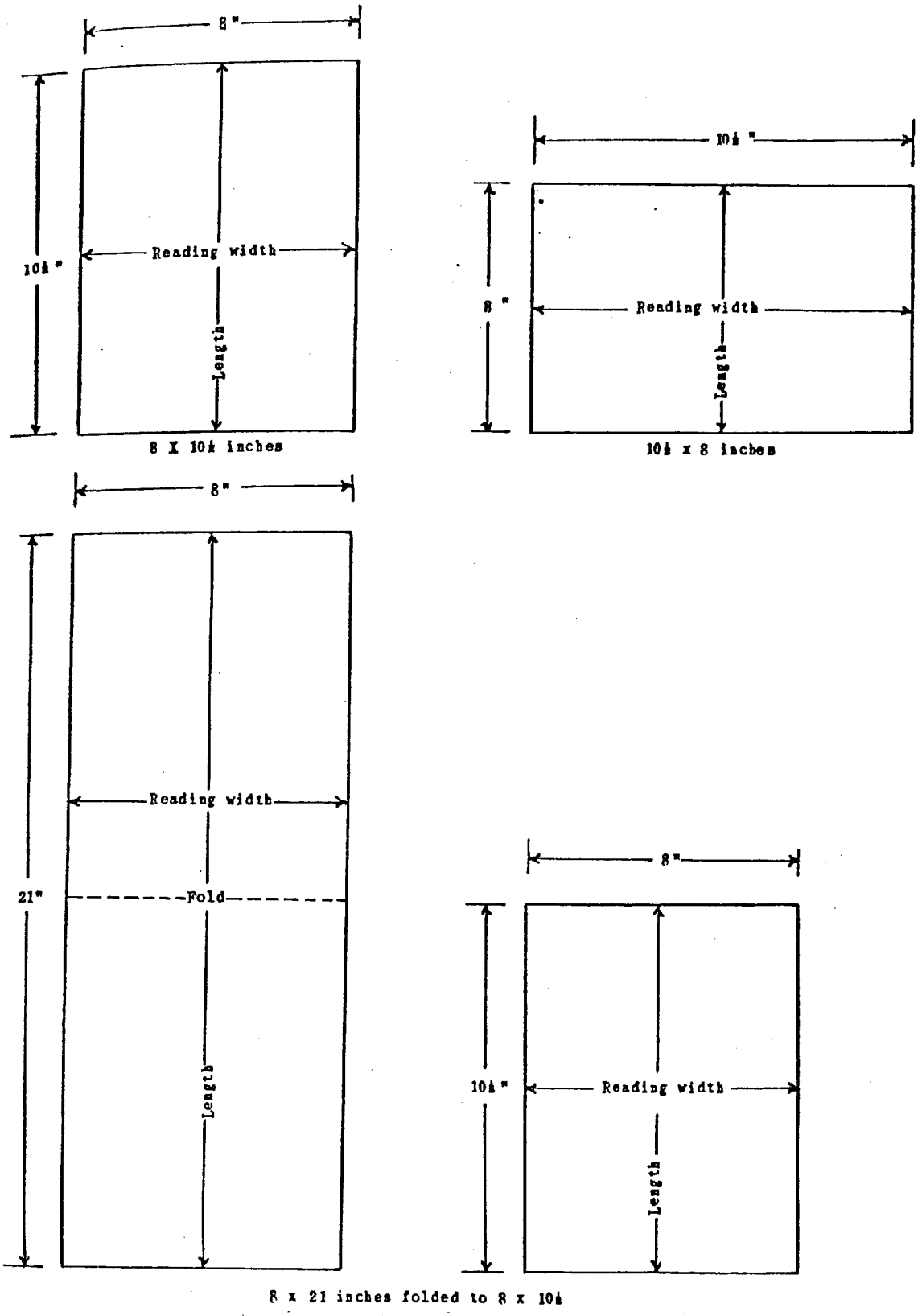
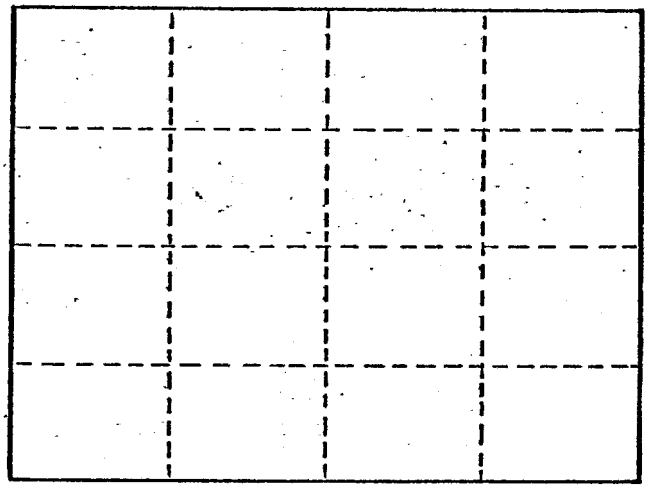


FIGURE 6. SPECIFYING THE PAPER SIZE

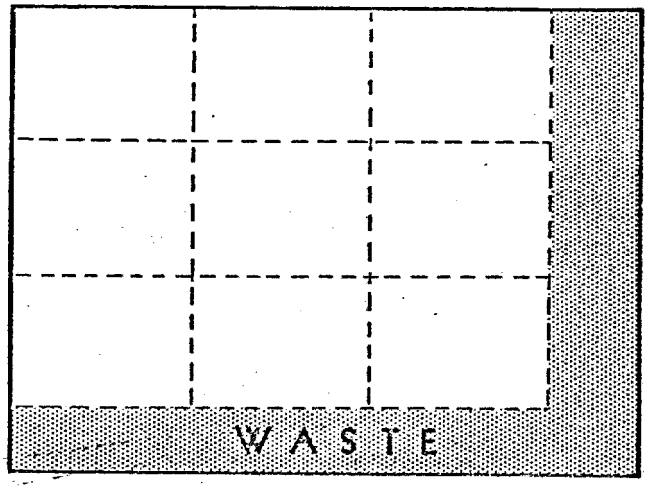
Apply Design Standards-
Save Paper!

1000 SHEETS 32"x42" COSTS APPROXIMATELY

sheet contains 16 pieces
8"x 10 1/2" - NO WASTE



sheet contains 9 pieces per
9"x 12" - 27% WASTE



NET SAVINGS
BY STANDARDIZING SIZE PER 1000 SHEETS

FIGURE 7 Using standard paper sizes to save money and wastage

Using the Box Design.

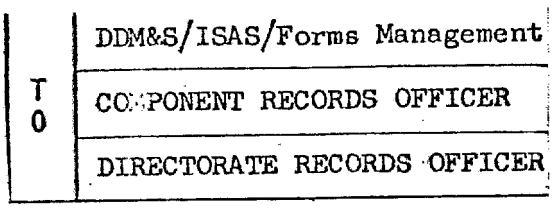
The box design is used for all forms for two reasons: one, it clearly defines the space for an entry and, two, it permits the analyst to segregate items, or groups of items. The space needed for each box depends on the amount of information the user must enter, not on the length of the item heading. The wording in each heading must be held to a minimum. Place the heading in the upper left corner of the box, so that the typist can read the item instructions easily.

Routing or Destination.

When these items are properly designed, they can reduce and simplify paperhandling, reduce the chance of error in delivery, and speed up delivery. If possible, the form should be made self-routing (by showing the addressee and the addressor at the top of the form), so that the user may forward it without preparing an envelope, routing slip, or letter of transmittal. Place the "To" and "From" boxes both on the same line across the form--or else align them vertically. If the form will be routed through more than one addressee (for action prior to its receipt by the final addressee), provide a box for each addressee. If the routing information is to be constant, have it printed as part of the form (see figure 8).

Designing the Signature Boxes.

Allow a space at least 3/6 inch deep by 3 inches wide for each signature. If the date of signature will be needed, place a date box near the signature; also, provide a box for the typed name, grade (if applicable), and title of the signer. When a single, final signature is required, place it on the right side of the page at the bottom of the form; if two are required, place both at the bottom. If a note,



ROUTING AT TOP OF FORM

COPY DISTRIBUTION AS SHOWN AT LOWER RIGHT CORNER OF EACH PART OF A SET

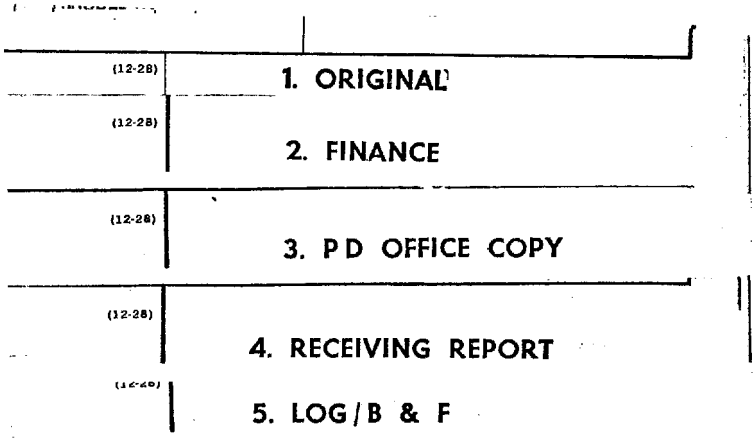


FIGURE 8. PREPRINTED ROUTING OR DESTINATION

footnote, or inclosure is required, place it immediately beneath the signature at the bottom of the form (but inside the border). (See figure 9.)

Form Numbers

a. Numbering. All forms will be numbered in sequence. Forms of temporary or one-time use will be indicated by placing the word "Temporary" to the immediate right side of the form number. Forms which require testing prior to permanent adoption will be so indicated by placing the word "Test" to the immediate right side of the form number.

b. Placement and Composition. Form numbers will normally be placed in the lower left-hand margin of the first page of the form, outside the border. In the case of visible file cards, tabulating cards, and similar forms in which design is limited by machine or equipment requirements, the form number may be placed elsewhere on the form provided that it appears in a prominent and conspicuous place. A consecutive number, and the date of origin or revision will appear, whenever a form is revised, an appropriate supersession notice will be placed near the right side of the form.

Supersession Notices

When Used. Whenver an existing form is revised, two or more forms are consolidated, or a new form is devised to replace a form or forms already in use, an appropriate supersession notice will be placed near the right of the form number. Any change, except one correcting a printer's error, is considered a revision. In addition to requiring a supersession notice, the date appearing on the form will likewise change. The office having primary interest in the form will be responsible for including the

proper supersession notice on the draft copy of the new or revised form. (See figure 10.)

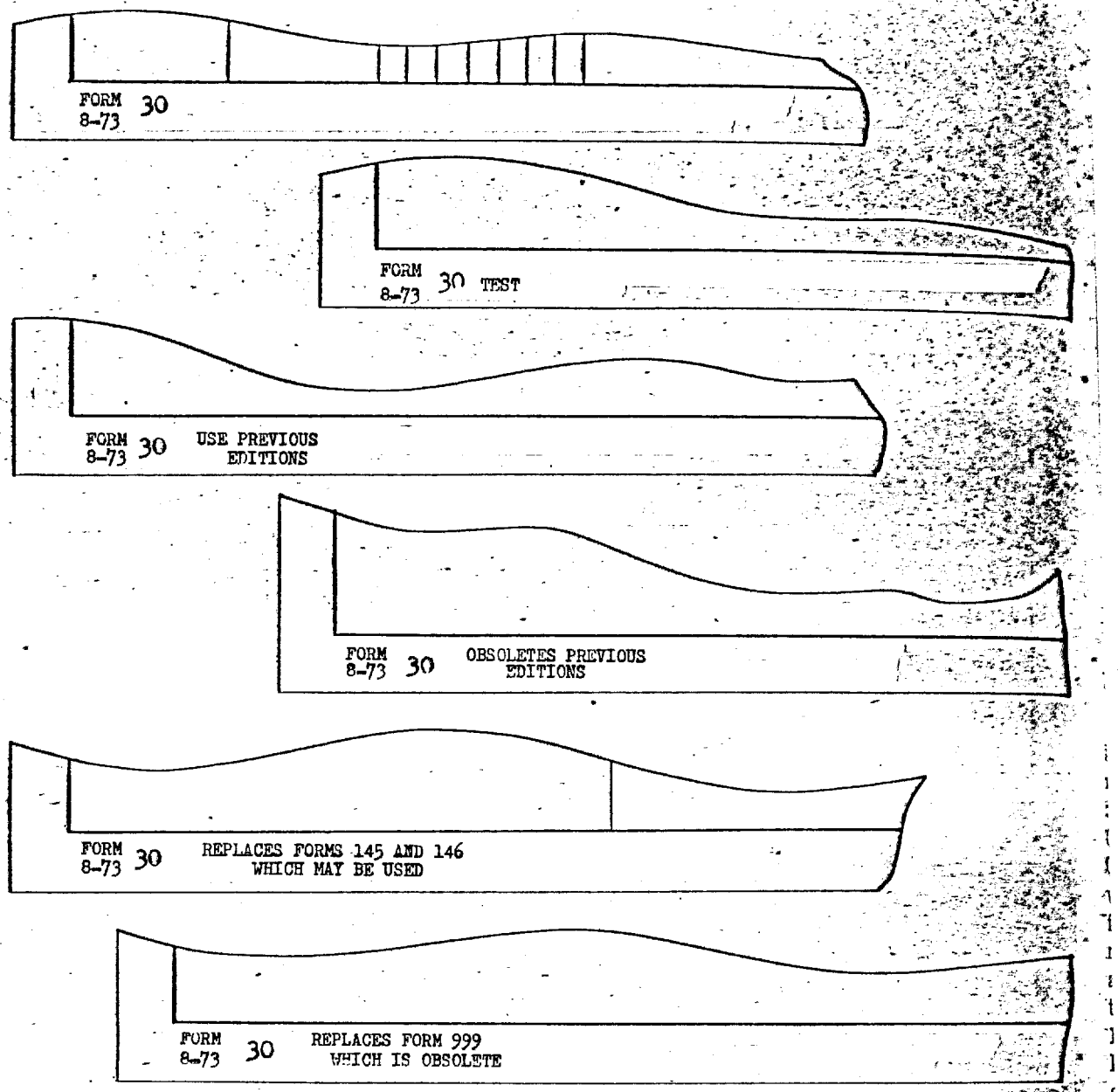


FIGURE 10. PLACEMENT OF FORM NUMBER AND SUPERSESSIONS NOTICES